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Gravity Probe B Relativity Mission

PROCEDURE FOR
Science Telescope Field of View Scans
GP-B P0229 Rev -
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Date

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Date

- 1.1. Align the star so that the image forms on the telescope axis to within 1 arc sec.
- 1.2. Set instrument parameters per table 1 below.
- 1.3. Open the application ScanStar v. 1.0 if it is not already open. The application is on MacIntosh Centris 650 located in Telescope Lab.
- 1.4. Set all the parameters as indicated in table 2 below. Set A Mtr # to Dewar X.
- 1.5. Click the run arrow in the application to start the scan.
- 1.6. Make sure that no one is allowed to touch the star during the scan.
- 1.7. When the scan is complete, the run busy signal will disappear.
- 1.8. A set of files of the name: Scan_Dir#_date will be created.

Here:

Dir can be either x or y for the scan direction

is the serial number of the scan of the day

date is the date in the format of m/d/y

- 1.9. Record the file names in table 3 below.
- 1.10. Set A Mtr # to Dewar Y and repeat procedures 1.6 through 1.10.
- 1.11. Procedure 1 complete.

Signed: _____ Date: _____

2. Data analysis

- 2.1 Plot the scan data with Igor Pro software.
- 2.2 Determine the peak signal for each channel.
- 2.3 Determine the field of view for 5% of the peak intensity and 10% of the peak intensity for each axis and give the numbers below.

+X axis, 5%:

+X axis, 10%:

-X axis, 5%:

-X axis, 10%;

+Y axis, 5%:

+Y axis, 10%:

-Y axis, 5 %:

-Y axis, 10%:

Table 1. Instrument Parameter Settings
(Tolerances are 10% unless otherwise noted)

Instrument/Parameter Name	Setting	Inspector Stamp
Star Suspension	55 psi front, 35 psi back	
Star Chamber Pressure	500 torr nominal	
Star Laser Diode Current	11.0 mA (+/- 0.1 mA)	
Star Focus Adjustment	At focal point (6 turns out)	
Telescope Probe Pressure	At vacuum (< 1 torr)	
Telescope Temperature	295 K	

Table 2. Application Parameter Settings

Button Name	Setting	Inspector Stamp
Function	Init & Run	
Serial Port	IP Serial B	
Scan Type	X Scan	
Init Mtr Mvmnt	Rewind	
Mtr Spd (stps/sec)	50	
Mtr/PZT	Stp Mtr	
# Grids	600	
Tot # Stps	1200 or as appropriate	
Init A	0.50	
Init B	0.50	
A Mtr #	Dewar X or Dewar Y	
B Mtr #	NOT USED	
Init Mov Dirtn	Positive	
Sample Rate (1/sec)	NOT USED	
# Samples/Chan	NOT USED	
Sample Mode	Slope	
Seq #	1	
A/D Brd #	6	
Chan Seq.	0 - 0, 1-1, ... 7-7	
Gains	0-7: 100	
Starting	0.2	
Fit	0.6	
Preamp Gain	1 for RT and 100 for LT	

